GPM Ground Validation Environment Canada (EC) Micro Rain Radar (MRR) GCPEx

Introduction

The GPM Ground Validation Environment Canada (EC) Micro Rain Radar (MRR) GCPEx data was collected by Environment Canada during the GPM Cold-season Precipitation Experiment (GCPEx) in Ontario, Canada during the winter season of 2012. Operating at 24 GHz, the MRR is a vertically pointing Doppler radar which derives quantitative rain rates, drop size distributions, radar reflectivity and fall velocities on vertical profiles up to several kilometers above the unit. The MRR used during GCPEX is the second generation of the instrument manufactured by METEK.

Campaign

The *GPM Cold-season Precipitation Experiment (GCPEx)* occurred in Ontario, Canada during the winter season of 2011-2012. GCPEx addressed shortcomings in the GPM snowfall retrieval algorithm by collecting microphysical properties, associated remote sensing observations, and coordinated model simulations of precipitating snow. These data sets were collected to aid in the achievement of the over arching goal of GCPEx which is to characterize the ability of multi-frequency active and passive microwave sensors to detect and estimate falling snow.

During GCPEx, an MRR was located at each of the five sites in Ontario, Canada. The site names and locations are:

Bob Morton: Lat: 44 degrees 10'35.29"N; Lon: 79 degrees 55'9.13"W
Steamshow: Lat: 44 degrees 10'50.27"N; Lon: 79 degrees 43'4.63"W
Sky Dive: Lat: 44 degrees 14'16.30"N; Lon: 79 degrees 38'25.02"W
CARE: Lat: 44 degrees 13'59.45"N; Lon: 79 degrees 46'50.11"W
Huronia: Lat: 44 degrees 41'10.25"N; Lon: 79 degrees 55'40.60"W

Data was collected from January 6, 2012 through March 1, 2012.

Further details on GCPEx are available at *https://ghrc.nsstc.nasa.gov/home/field-campaigns/gcpex*. Information on the Global Precipitation Measurement (GPM) mission is available at *http://pmm.nasa.gov/GPM*. Additional campaign collections containing MRR data can be found at *http://ghrc.nsstc.nasa.gov*.

Instrument Description

The EC MRR is a frequency-modulated continuous wave (FMCW) vertically pointing Doppler radar, which operates at 24.24GHz. The MRR measures profiles of Doppler spectra and derives drop size distributions, rain rates, and liquid water rates. The MRR is the second generation of the instrument manufactured by METEK. Additional information is available at *https://metek.de/product/mrr-2/*.

*Please note that the CARE and Steamshow MRRs used version 5 software and the Skydive, Huronia, and Morton MRRs used version 6 software.

Investigators

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File Naming Convention

The EC MRR files are named with the following convention:

gcpex_mrr_[YYYYMMDD]_RawData_EC_[SITE].txt
gcpex_mrr_[YYYYMMDD]_AveData_EC_[SITE].txt

where,

gcpex = GPM Cold-season Precipitation Experiment
mrr = Micro Rain Radar
YYYYMMDD = the year, month and day of the data
RawData = raw data
AveData = averaged data
EC = Environment Canada
SITE = site name

The EC MRR browse files are named with the following convention:

gcpex_mrr_[YYYYMMDD]_EC_daily_[SITE].gif
gcpex_mrr_[YYYYMMDD]_[HHMM]_EC_last10_[SITE].gif
gcpex_mrr_[YYYYMMDD]_[HHMM]_EC_spectrum_[SITE].gif

where,

gcpex = GPM Cold-season Precipitation Experiment
mrr = Micro Rain Radar
YYYYMMDD = the year, month and day of the data
HHMM = the hour and minutes of the data
daily = daily velocity-reflectivity quick look plots
last10 = last 10 profiles quick look plots
spectrum = spectrum-height quick look plots
EC = Environment Canada
SITE = site name
gif = graphics interchange format

Data Format

The GPM Ground Validation EC MRR data set consists of daily ASCII text files. More information on the format of the raw data can be found in the *MRR User Guide*.

Citation

Our data sets are provided through the NASA Earth Science Data and Information System (ESDIS) Project and the Global Hydrology Resource Center (GHRC) Distributed Active Archive Center (DAAC). GHRC DAAC is one of NASA's Earth Observing System Data and Information System (EOSDIS) data centers that are part of the ESDIS project. ESDIS data are not copyrighted; however, in the event that you publish our data or results derived by using our data, we request that you include an acknowledgment within the text of the article and a citation on your reference list. Examples for general acknowledgments, data set citation in a reference listing, and crediting online web images and information can be found at: *https://ghrc.nsstc.nasa.gov/home/about-ghrc/citing-ghrc-daac-data*

Contact Information

To order these data or for further information, please contact:

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